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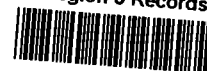
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December 6, 2004

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Mr. Dion Novak  
Remedial Project Manager (SR-6J)  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3590

EPA Region 5 Records Ctr.



362885

Subject: WA No. 219-RSBD-B5Y7, Contract No. 68-W6-0025  
Eagle Zinc Company Site, Hillsboro, Illinois  
Comments on Draft Remedial Investigation Report, November 2004

Dear Dion:

Please find enclosed a technical memorandum providing our comments on the Draft Remedial Investigation Report submitted on November 5, 2004. Please feel free to call us if you have any questions regarding the enclosed document.

Sincerely,

CH2M HILL

for Lisa R. Cundiff  
Site Manager

STL\Draft Remedial Investigation Report Review Cover Letter Dec 6.doc

c: Stephen Nathan, PO/U.S.EPA, Region 5 (w/o enclosure)  
Dave Alberts, CO/U.S. EPA, Region 5 (w/o enclosure)  
Ike Johnson, PM/CH2M HILL, MKE  
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## Review of the Draft Remedial Investigation Report for the Eagle Zinc Company Site

TO: Dion Novak/USEPA Region 5

FROM: John Lowe/CH2M HILL  
Ryan Loveridge/CH2M HILL  
Chris English/CH2M HILL  
Lisa Cundiff/CH2M HILL

DATE: December 6, 2004

CH2M HILL has reviewed the Draft Remedial Investigation (RI) Report for the Eagle Zinc Company Site (the Site) in Hillsboro, Illinois. The Draft Remedial Investigation Report was submitted by ENVIRON on November 5, 2004.

### Background

The Draft RI Report summarizes previous investigations conducted at Eagle Zinc as well as Phases I and II of the RI. As part of the RI, a Human Health Risk Assessment (HHRA) and Screening Level Ecological Risk Assessment (SLERA) were conducted and are included in the Draft RI Report. Original HHRA and SLERA documents were submitted to USEPA in March 2004. CH2M HILL's comments on the documents were submitted to USEPA in a technical memorandum on April 5. Following USEPA's review of the documents, updated review comments were submitted to USEPA in a technical memorandum on April 23.

CH2M HILL participated in a meeting with the Potentially Responsible Party (PRP) Group and the USEPA Region 5 at ENVIRON's offices in Chicago, Illinois on June 2. Following the meeting, CH2M HILL prepared a technical memorandum summarizing an approach for evaluating on-site ecological receptors in the Eagle Zinc SLERA. CH2M HILL's human health and ecological risk assessors also discussed USEPA's review comments on the HHRA and SLERA in phone calls with the PRP Group's risk assessors. Teleconferences regarding the SLERA were held on June 7, 8, 9, and 14. A teleconference on the HHRA was held on June 29.

The responses to comments on the HHRA and the SLERA were documented in letters from ENVIRON dated June 29 and July 15, respectively. CH2M HILL reviewed these letters and provided feedback to USEPA through email and phone correspondence. USEPA issued acceptance letters regarding the HHRA and SLERA responses to comments on July 29. The revised HHRA and SLERA reports were submitted on August 19. CH2M HILL's risk assessors reviewed the revised reports and provided general and specific comments that were presented in a Technical Memorandum on September 15, 2004.

CH2M HILL participated in a meeting with the PRP Group and the USEPA Region 5 at ENVIRON's offices in Chicago, Illinois on November 18, 2004. ENVIRON provided a

presentation of the RI Report at this meeting. CH2M HILL provided general verbal comments on the HHRA and SLERA portions of the Remedial Investigation (RI) at this meeting.

CH2M HILL's technical comments on the Draft RI Report are provided below.

## General Comments

The nature and extent discussion does not reflect the actual Constituents of Potential Concern (COPCs) that were carried through the risk assessment. For example, within the text VOCs are not considered as Potential Contaminants of Concern (PCOCs) in any of the media, however, they are listed in the site conceptual model table and are carried through the risk assessment. The report needs to be consistent between the sections regarding the use of "PCOC" or "COPC". If there is a difference between the two terms, this needs to be explained in the text.

Typically an acronym list is provided in the RI Report either in the front matter of the document or as an Appendix. This RI Report contains a partial list of acronyms as a subsection of Section VII Ecological Risk Screening Evaluation. The acronym list needs to be completed to include all acronyms used within the text of the RI Report and placed in an appropriate location.

References should be provided for the document as a whole. Currently references are provided as subsection H of Section VI - Human Health and Risk Assessment and subsection F of Section VII - Ecological Risk Screening Evaluation. One complete reference list needs to be included as an Appendix to the RI Report.

Formatting is not consistent between the two sections describing nature and extent.

There is no discussion related to fate and transport of specific COPCs.

## I. Introduction

Add the following dates and key events to the timeline presented as Figure I-3:

- Risk Science International Risk Assessment Report, November 1982
- Underground Storage Tank Removal under IEPA LUST Program, April 1998
- Technical Memorandum, Phase1-Source Characterization, March 2003
- Termination of NPDES storm water permit, July 2003
- Technical Memorandum, Phase 2-Migration Pathway Assessment, November 2003
- No Further Remediation Letter for former UST removal action, August 2004
- Human Health Risk Assessment, August 2004
- Ecological Risk Screening Evaluation, August 2004

Add a figure showing the locations of off-site soil samples that were collected.

## II. Physical Characteristics of the Study Area

**Section II.B.1, page 2:** add a description of current site use (i.e., is it still an active facility, or currently unused).

**Section II.A, Surface Features, page 13:** First sentence has a typographical error. The sentence should read ...“described in detail below.” Include a copy of the topographic survey map in this report.

**Section II.C, Surface Water Hydrology, page 14:** Three surface water ponds are described in the first paragraph. The figures all identify only two ponds. The engineered retention pond is described further in the next paragraph as a storm water retention system. We recommend changing the text in the first paragraph to “Three surface water *bodies*” and identify the engineered retention “pond” as a retention “*system*” to be consistent. The text needs to clarify and refer to a figure for the reader, ensuring that the figure identifies all three surface water bodies. Add a reference to Figure VII-4 when describing the un-named tributary and creeks.

**Section II.E, page 16:** Add a description of the groundwater quality as further rationale for why it can not be used as a potable supply. Specific information needed includes a description of total dissolved solids and sulfate concentrations.

**Section II.F, page 17:** The report should provide some description of the population trend, specifically if population has been increasing, decreasing or has been stable over the past several years.

## III. Phase 1 – Source Characterization

**Section III.A.2, page 18:** Add a statement to the second paragraph noting that the soil samples were collected from underneath the residue piles (the point is noted later, but it still needs to be stated more clearly).

**Section III.A.2, page 18:** Provide a statement regarding how the different analytical results, particularly the XRF results, were used (i.e., for evaluating nature and extent, risk assessment, etc.).

**Section III.B.1, page 22, 3<sup>rd</sup> paragraph, last sentence:** “PAOC” should be “PCOC”.

**Section III.B.1, page 23, 5<sup>th</sup> paragraph:** The rationale for drawing a linear relationship between zinc and cadmium concentrations needs to be more clearly explained. As it is written, the text potentially leads the reviewer to the conclusion that cadmium impacts in soil have been significantly understated, and that XRF was not a robust analytical technique for cadmium. If cadmium could not be detected directly using XRF due to elevated instrument detection limits, what is the source for the cadmium data used in the plot generated in Appendix III-3? The data evaluation used to generate the plot needs to be described in further detail. Visual analysis indicates that there are more outliers than would be expected for a strong linear relationship with a coefficient of correlation of 0.9 ( $r^2 = 0.8133$ ,  $r = 0.9018$ ). Further details of this analysis should be provided, if it is going to be used to support characterization of cadmium in soil.

## IV. Phase II Migration Pathway Assessment

**Section IV.4., page 32, 1<sup>st</sup> sentence:** Please correct the typographical error in "...15 residue pipes/groups" to read "15 residue piles/groups".

**Section IV.B.6, page 38:** Please reword and expand the following text so that the conclusion follows logically from the information stated, and so that it is technically appropriate:

*"As the aggregate pile weathers...potential for dust emissions is greatly reduced." This document also indicates that the half-life of erosion potential is very short (ranging from one to four minutes). Therefore, any air erosion of the piles would be expected to be (1) temporally limited to a very short period immediately following emplacement, and (2) spatially limited to the immediate vicinity of the source pile (Section 13.2.4 of the USEPA's January 1995 Compilation of Air Pollutant Emission Factors. AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources).*

As written, this analysis is insufficient to support the assertion that there have been no significant dust emissions from the residue piles. The only useful information presented from the discussion is the statement that weathering of aggregate piles reduce the potential for dust emissions. The RI report does not say anything about the conditions (such as time after placement) that erosion potential is deemed by the AP-42 authors to be very short; therefore, it is just as likely that at the Eagle-Zinc site, there could have been significant dust emissions for many years prior to the RI. The term "half-life of erosion potential" is not defined for the reader, so that it is not clear how this information supports the assertion that erosion around the piles is not a concern. There is no information presented to support the assertion that emissions would be spatially limited to the immediate vicinity of the source pile.

A figure is requested displaying the distribution of soil concentrations from the IEPA Expanded Site Investigation and any other pertinent analytical results in soil along with a wind rose (currently provided as Appendix II-1), so that the distribution of contaminants in soil relative to prevailing wind direction can be better visualized.

Finally, the conclusion that "constituent concentrations in well-distributed off-site soil samples collected by IEPA were not significantly different from site-specific background levels." is not meaningful without any specification regarding how the groups of off-site and site-specific background samples were selected, what statistical test was performed, and what decision rule was used to determine what constituted a "significant difference". The assumptions used for the data grouping and statistical calculations are requested to be provided in the RI report. Otherwise, it is requested that the conclusion regarding comparison of IEPA offsite soil sample results to background be deleted.

While the conclusion that offsite dust impacts from the residue piles may be reasonable, there is inadequate data and analysis presented in the RI to support that conclusion. Additional data collection may be warranted in order to produce an adequate air pathway analysis for the residue piles.

## V. Site Conceptual Model

The PCOC table does not reflect what has been discussed and presented within the text. Based on the text (Sections III.B and IV.B Nature and Extent), the following are the PCOCs by media:

On-Site Soil	Sediment Western Drainageway	Sediment Eastern Drainageway	Residue	Groundwater	Surface Water
Cadmium	Antimony	Cadmium	TCLP-Lead	Cadmium	Cadmium
Zinc	Arsenic	Zinc		Lead	Zinc
	Cadmium			Manganese	Iron
	Lead			Thallium	
	Zinc			Zinc	
				Iron	

There is a disconnect between the SCM and identified PCOCs/COPCs used in the risk assessment. The above table lists those PCOCs identified within the text, however, the COPCs used in the risk assessment include additional constituents.

## VI. Human Health Risk Assessment Report

**Section VI.** Somewhere in the HHRA, a statement should be made that potential exposure pathways from the residue piles were not addressed in this section.

In addition, the introduction to the HHRA should note that this section was previously provided to EPA for its review, and that comments from EPA have been incorporated into the version presented in the RI report.

## VII. Screening Level Risk Assessment Report

**Section VII.B.1.a. Page 86. Bullet for Appendix A-6.** The information in Appendix A-6 does not provide, nor was it intended to provide, conclusive evidence that the physical impacts are not site-related. The causes of the low flow, sedimentation, etc. were not investigated in the October, 2004 visit. The statement, "...not related to the site" should be removed from the bullet.

**Section VII.B.1.c. Page 96, Last paragraph:** Update this paragraph as appropriate with the revisions made in the evaluation of off-site air deposition (see above comments).

**Section VII D.2.b. Page 127 and c. Page 130:** Re-evaluate risks to the mink with the assumption that mink will travel overland to the pond for the fish. Although home range considerations are likely to limit population-level impacts, as was the case for the green heron, the assumption in the RI that mink will not travel overland to the pond may be incorrect and suggests that the mink was not a suitable surrogate receptor.

**Section VII.D.1.c. Page 126 and Overall Conclusions in Section VII.D.5. Scientific Management Decision Point and Section VIII.C:** Change the conclusions on Page 123 and in the subsequent sections to note that the impacts described in the ERA are adverse chemical impacts for the current condition. Adverse chemical impacts were not observed at the Site, but, if occurring, are likely to be indistinguishable from physical impacts at the site. Physical impacts were observed that would result in ecological impacts, possibly even at the population-, community-, or ecosystem-level, and these physical impacts may also exclude ecological receptors, thereby limiting the current chemical exposure and the potential for adverse chemical impacts.

**Section VII.D.5. Scientific Management Decision Point and Section VIII.C:** The 4<sup>th</sup> bullet and the last paragraph on page 138 need to be appropriately modified as per the previous comment. Adverse chemical impacts were not observed or are predicted based on the current condition. Physical impacts were observed that would result in ecological impacts, and these physical impacts are indistinguishable from any chemical impacts and/or are excluding ecological receptors (resulting in the spatially limited exposure scenario).

**Section VII.D.5. Scientific Management Decision Point and Section VIII.C:** The conclusions for the Ecological Risk Screening Evaluation should note that the direct exposure to the residue piles was not addressed.

## VIII. Conclusions

**Section VIII.A.** The PCOCs identified in this section are not the same as those identified in the two Nature and Extent sections, Sections III.B and IV.B.

**Section VIII.B.** The conclusions for the HHRA should note that potential exposure pathways from the residue piles were not addressed.

**Section VIII.D.** The second and third paragraphs of this section should be deleted, because they are not based on the information presented in the RI. As stated in the RI, additional data will be collected to better evaluate the potential exposures and risks posed by the residue piles.